SERVICE BULLETIN

Original Issue Date: **1/00**
Model: **10–100 kW (Ford-Powered Models)**
Market: **Industrial**
Subject: **Engine Ignition Timing Specifications**

This service bulletin summarizes engine ignition timing specifications for most Ford-powered generator sets including discontinued generator set models and fuel system options.

Engine ignition timing information for all fuels and fuel combinations is generally not listed in the generator set or engine operation and service manuals. Refer to the engine operation and/or service manual for the engine ignition timing adjustment procedure.

Figure 1 provides the engine and/or generator set manufacturer's ignition timing recommendations for optimum engine performance at sea level.

Before adjusting the engine ignition timing on distributor ignition systems, be sure the fuel meets the engine manufacturer's specifications indicated in the engine operation manual. If engine knocking or detonation occurs, reduce engine ignition timing at 1–2 degree increments until the engine knocking stops and the engine operates smoothly.

Most distributorless ignition systems are factory-set and not adjustable. See Figure 1 for distributorless ignition timing specifications and Figure 2 to confirm the factory lead connection configurations.

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Generator Set Model (kW)	Ford Engine Model	Ignition Timing at Before Top Dead Center (BTDC) by Fuel Type					
		Natural Gas	LP Gas	Natural Gas/LP Gas Combination	Gasoline/ Natural Gas Combination	Gasoline/ LP Gas Combination	Gasoline
Breaker Point Ignition							
10 kW	VSG-411	11°	11°	11°	—	—	—
20 kW	LSG-423	30°	25°	25°	30°	25°	30°
30 kW	LSG-423 Turbocharged	N/A	20°	20°	—	—	—
30 kW	CSG-649	32°	30°	30°	32°	30°	32°
33 kW							
35 kW							
45 kW						28°	
50 kW	LSG-875	36°	36°	36°	36°	36°	36°
60 kW							
70 kW		34°	34°	34°	34°	34°	34°
80 kW	LSG-875 Turbocharged	34°	22°	22°	—	—	—
100 kW							
Electronic Breakerless Ignition							
17 kW	LSG-423	30°	30°	30°	—	—	—
18 kW					30°	30°	30°
20 kW			25°	25°		25°	
30 kW	LSG-423 Turbocharged	N/A	20°	20°	—	—	—
30 kW	CSG-649	28°	20°	20°	28°	20°	28°
33 kW							
35 kW							
45 kW						28°	
40 kW	LSG-875	36°	36°	36°	36°	36°	36°
50 kW							
60 kW							
70 kW		34°	34°	34°			
80 kW	LSG-875 Turbocharged	34°	22°	22°	—	—	—
100 kW							
Electronic Distributorless Ignition							
10 kW	VSG-411	Distributorless ignition systems are factory-set and not adjustable.					
10 kW	VSG-413						
12 kW							
17 kW	VSG-413, 3600 rpm						
18 kW	LRG-423	34°	26°	26°	—	—	—
18 kW	LRG-425	29°	24°	24°	—	—	—
20 kW	LRG-423	34°	26°	26°	20°	20°	20°
20 kW	LRG-425	29°	24°	24°	11°	11°	11°
22 kW	VSG-413, 3600 rpm	Distributorless ignition systems are factory-set and not adjustable.					

— Fuel system not available

N/A Data not available

Note: All values apply to 60 Hz models using 1800 rpm engines unless noted as 3600 rpm. Contact the Service Department for 50 Hz engine ignition timing specifications.

Note: The LP gas data above applies to LP gas vapor and LP liquid withdrawal fuel systems.

Figure 1 Engine Ignition Timing Specifications

Generator Set Model (kW)	Ford Engine Model	Factory Lead Connection Configuration by Fuel Type					
		Natural Gas	LP Gas	Nat. Gas/ LP Gas Combination	Gasoline/ Natural Gas Combination	Gasoline/ LP Gas Combination	Gasoline
18 kW (See Figure 3)	LRG-423	70—Red/Green 7N—Black 7N—Yellow/Black from pins #6 & #7	70—Red/Green 7N—Black 7N—Yellow/Black from pin #6	70—Red/Green 7N—Black 7N—Yellow/Black from pin #6	—	—	—
18 kW (See Figure 4)	LRG-425	70—Red/Green 70—Yellow/Black 7N—Black 7N—Brown/White	70—Red/Green 7N—Black 7N—Brown/White	70—Red/Green 7N—Black 7N—Brown/White	—	—	—
20 kW (See Figure 5)	LRG-423	70—Red/Green 7N—Black 7N—Yellow/Black from pins #6 & #7	70—Red/Green 7N—Black 7N—Yellow/Black from pin #6	70—Red/Green 7N—Black 7N—Yellow/Black from pin #6	70—Red/Green 7N—Black Maintain Yellow/ Black wire loop	70—Red/Green 7N—Black Maintain Yellow/ Black wire loop	70—Red/Green 7N—Black Maintain Yellow/ Black wire loop
20 kW (See Figure 6)	LRG-425	70—Red/Green 70—Yellow/Black 7N—Black 7N—Brown/White	70—Red/Green 7N—Black 7N—Brown/White	70—Red/Green 7N—Black 7N—Brown/White	70—Red/Green 7N—Black	70—Red/Green 7N—Black	70—Red/Green 7N—Black

— Fuel system not available

Note: All colored leads are part of the ignition module harness. Tape to insulate the exposed end of all unused leads.

Note: Lead 70 is 12 volts DC positive (+) and energized during engine run. Lead 7N is the ground connection.

Note: LRG-425 engines only
Brown/White lead connects to lead 7N for gas fuels only.
Yellow/Black advances timing 5° when connected to lead 70.
Yellow/Black retards timing 3° when connected to lead 7N.

Note: The LP gas data above applies to LP gas vapor and LP liquid withdrawal fuel systems.

Figure 2 Factory Lead Connection Configurations

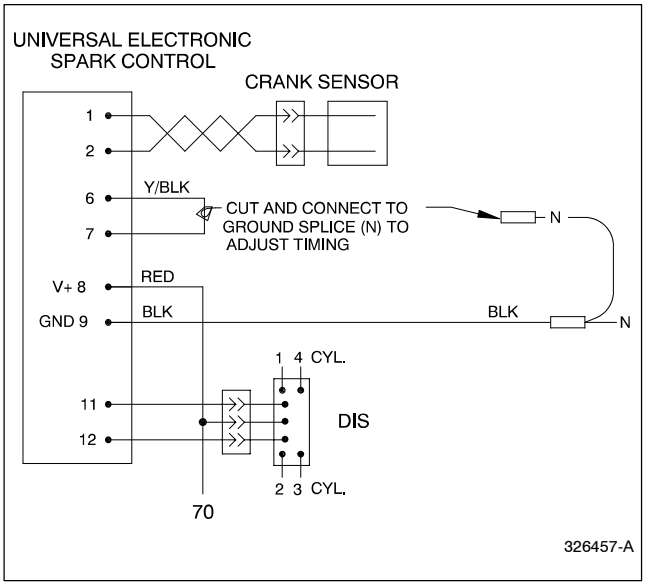

Figure 3 18 kW with LRG-423 Engine

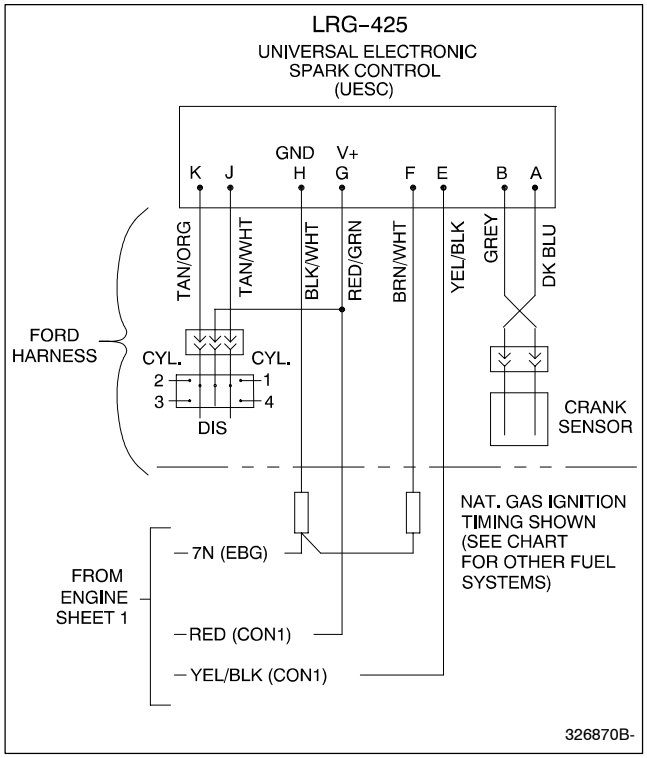

Figure 4 18 kW with LRG-425 Engine

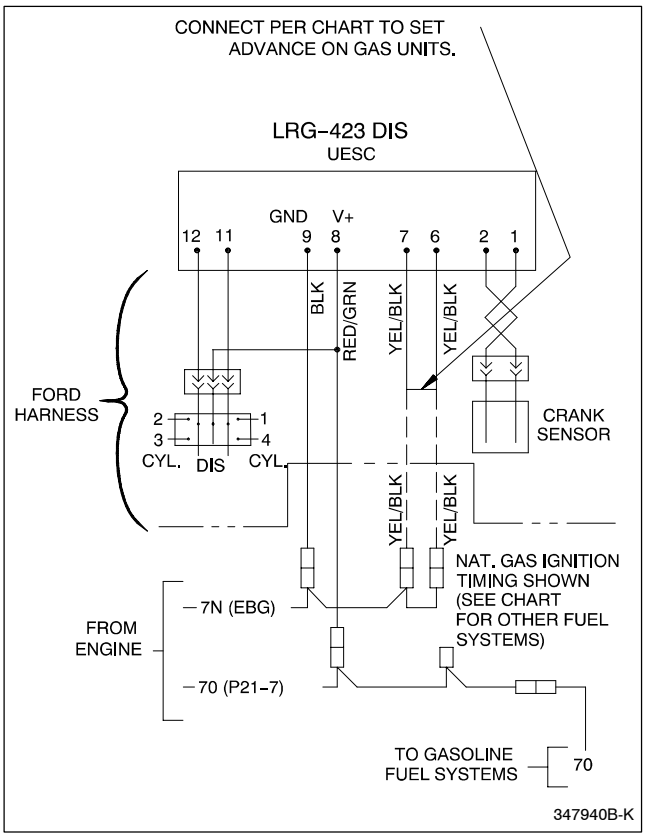

Figure 5 20 kW with LRG-423 Engine

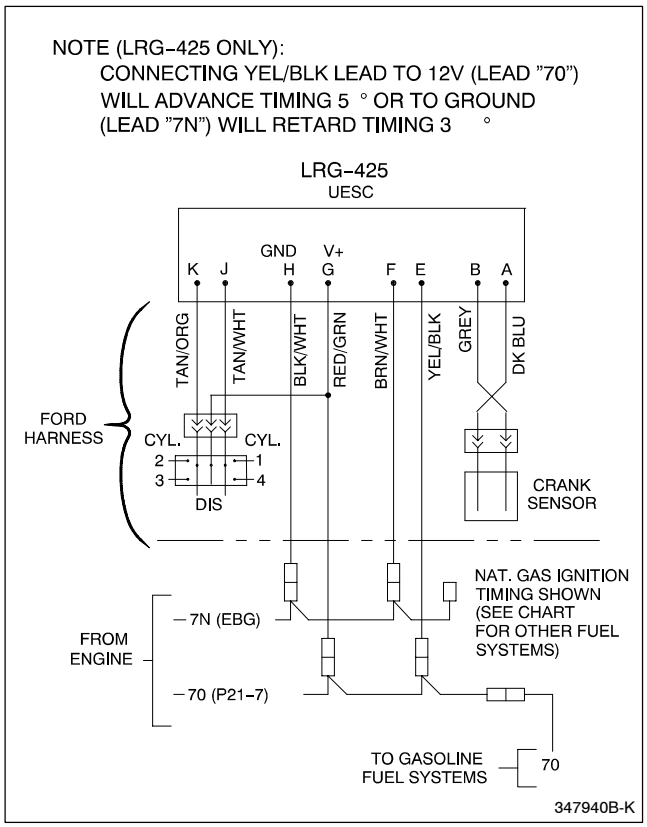

Figure 6 20 kW with LRG-425 Engine